Lafayette Consolidated Government

Lafayette Utilities System Smart Grid Project

Abstract

Lafayette Consolidated Government's Lafayette Utilities System (LUS) Smart Grid project involves the deployment of advanced metering infrastructure (AMI), distribution automation equipment, and advanced monitoring equipment for the transmission system. LUS expects the smart meters to reduce meter reading costs, lower vehicle emissions through fewer truck rolls, and enable advanced electric services for its customers. These services include an enhanced Web portal and a pilot time-based rate program. A network of new transmission and distribution assets provides improved reliability, reduced grid operations and maintenance costs, reduced outage duration, reduced peak loads, and reduced overall energy usage across LUS's service territory.

Smart Grid Features

Communications infrastructure includes meter communications based on a radio frequency mesh network with ZigBee-based customer interface and backhaul communications based on fiber optics. In addition, new radio frequency and fiber optics-based communications assets are being deployed on LUS's transmission and distribution network to complement LUS's system monitoring capability through their existing supervisory control and data acquisition (SCADA) system.

Advanced metering infrastructure includes the system-wide deployment of 63,700 smart meters and the supporting meter data management system over the course of four years. The project also implements an outage management system with plans for full integration of its existing customer information system and billing system with the AMI system by the end of the project. The AMI, combined with the new communications infrastructure, enables LUS to reduce operating costs and to provide new advanced services for its customers.

Advanced electricity service options include access to a customer Web portal for all customers who receive smart meters, as well as a pilot deployment of 200 in-home displays. The Web portal is intended to enable customers to better manage their energy use and make more informed energy-use decisions based on the new pricing programs. In-home displays also provide information feedback.

At-A-Glance

Recipient: Lafayette Consolidated Government

State: Louisiana

NERC Region: Midcontinent Independent System Operators

Total Budget: $23,260,000

Federal Share: $11,630,000

Project Type: Advanced Metering Infrastructure
Customer Systems
Electric Distribution Systems

Equipment

- 63,700 Smart Meters
- AMI Communication Systems
  - Meter Communications Network
  - Backhaul Communications
- Meter Data Management System
- Outage Management System
- Customer Web Portal Access for 63,700 Customers
- 200 In-Home Displays
- 200 Direct Load Control Devices (Central Air-Conditioners)
- Distribution Automation Equipment for 80 out of 80 Distribution Circuits
  - 136 Automated Capacitors
- Transmission Line Monitoring Equipment

Time-based Rate Programs (Pilot Program)

- Time of Use
- Critical Peak Pricing

Key Targeted Benefits

- Reduced Meter Reading Costs
- Reduced Operating and Maintenance Costs
- Reduced Electricity Costs for Customers
- Improved Power Quality
- Reduced Costs from Theft
- Reduced Truck Fleet Fuel Usage
- Reduced Greenhouse Gas and Criteria Pollutant Emissions

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Direct load control devices include equipment for up to 200 customers with central air conditioners.

Time-based rate programs include the use of time-of-use and critical peak pricing and related information services in conjunction with advanced metering to encourage consumers to shift their consumption from on- to off-peak periods and then to measure and validate their demand response. The pilot program is intended to evaluate the viability of critical peak pricing overlaid with time-of-use rates.

Distribution automation systems include deploying remote fault indicators and automated capacitor banks with remote SCADA control and monitoring to improve reliability and to reduce line losses and operations and maintenance costs.

Distribution system energy efficiency improvements involve integration of automated capacitors with power quality monitoring systems. The capacitors improve voltage and volt ampere reactive control, power quality, and distribution capacity by reducing energy losses on the distribution system.

Transmission system automation and upgrades include the deployment or upgrade of transmission protection devices at three sites and upgrade of SCADA remote terminal units at all transmission substations.

Timeline

Key Milestones	Target Dates
Transmission asset deployment begins	Q1 2011
Distribution asset deployment begins	Q4 2011
AMI deployments begin	Q4 2011
Transmission and distribution asset deployments end	Q4 2012
Customer systems and time-based rate program begin	Q3 2013
AMI deployment, customer systems and time-based rate program end	Q2 2014

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